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EUROPEAN PATENT APPLICATION

21 Application number: 89200084.5

51 Int. Cl.4: **B26B 19/20**

22 Date of filing: 16.01.89

30 Priority: 21.01.88 NL 8800132

43 Date of publication of application:
26.07.89 Bulletin 89/30

84 Designated Contracting States:
AT DE FR GB NL

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54 **Hair trimmer.**

57 A hair trimmer has a housing (1) provided with a stationary cutter (2) and a cutter (3) which can be driven relative to the stationary cutter (2), and housing (1) being provided with a comb attachment (4) which is adjustable relative to the housing (1). The housing (1) is provided with a rotatable annular adjusting element (5) which forms part of a spiral-groove coupling between the housing (1) and the comb attachment (4).

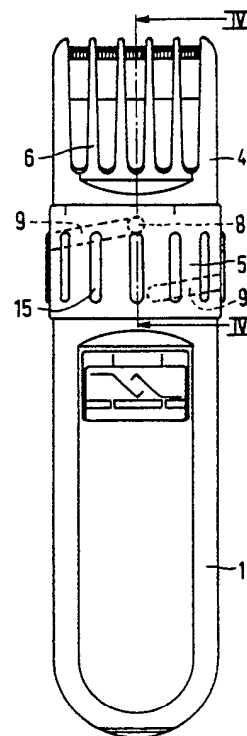


FIG.1

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Hair trimmer

The invention relates to a hair trimmer, comprising a housing provided with a stationary cutter and a cutter which can be driven relative to the stationary cutter, the housing being provided with a comb attachment which is adjustable relative to the housing.

Such a hair trimmer is known, for example for the examined Japanese Patent Application 59-32153. In this trimmer the comb attachment comprises laterally projecting actuating elements for the adjustment mechanism and the latching mechanism of this comb attachment. These projecting actuating elements are annoying during use of the trimmer and, moreover, it is not unlikely that the position of the comb attachment relative to the trimmer is altered by contact with other objects in spite of the latching mechanism.

It is an object of the invention to solve these problems and to this end of the invention is characterized in that the housing is provided with a rotatable annular adjusting element which forms part of a spiral-groove coupling between the housing and the comb attachment.

Special embodiments are defined in the appended subsidiary Claims.

An embodiment of the invention will now be described in more detail, by way of example, with reference to the accompanying Figures.

Fig. 1 is a front view of the hair trimmer.

Fig. 2 is a side view of the hair trimmer shown in Fig. 1.

Fig. 3 is a side view similar to that shown in Fig. 2, but showing the comb attachment in another position.

Fig. 4 is a partly sectional view taken on the line IV-IV in Fig. 1 and showing only the comb attachment and the adjusting element in cross-section.

Fig. 5 shows the comb attachment in a longitudinal sectional view taken on the line V-V in Fig. 7.

Fig. 6 is a longitudinal section view of the adjusting element.

Fig. 7 is an end view of the comb attachment.

Fig. 8 is a front view of the comb attachment.

Fig. 9 shows a modification of the embodiment shown in Figs. 1 to 8 in a sectional view similar to that in Fig. 4.

The hair trimmer shown in the Figures comprises a housing 1 with a stationary cutter 2 and a cutter 3 which can be driven relative to the stationary cutter. The drivable cutter 3 is reciprocated in a

manner known per se, so that the trimmer is particularly suitable, for example, for trimming a beard. For this purpose the trimmer comprises an accessory in the form of a comb attachment 4 which is adjustable relative to the housing 1.

For this adjustment the housing 1 is provided with an annular adjusting element 5 which is rotatable relative to the housing 1. The adjusting element 5 forms part of a spiral-groove coupling between the housing 1 and the comb attachment 4, so that, as will be explained in more detail hereinafter, the position of the comb attachment 4 relative to the housing 1 and hence relative to the cutters 2 and 3 can be changed by rotating the adjusting element 5. In the situation illustrated in Fig. 3 the comb attachment has been moved over a distance a in comparison with the situation shown in Fig. 2, so that the distance b_2 between the teeth 6 of the comb attachment and the cutters 2, 3 in Fig. 3 is an amount of larger than the corresponding distance b_1 in Fig. 2. In this way the trimmer can be adjusted to the required beard length.

The adjusting element 5 is rotatably arranged on a cylindrical portion 7 of the housing 1. This portion 7 is provided with a projection 8 which engages a spiral groove 9 in the inner side of the adjusting element 5. The comb attachment 4 is coupled to the adjusting element 5 by means of the resilient hooks 10 of the comb attachment, which hooks engage the groove 11 in the adjusting element (see also Figs. 5 and 6). By rotating the adjusting element 5 relative to the housing 1 and adjusting element is moved relative to the housing 1 in the longitudinal direction P or in the opposite direction because the projection 8 engages in the spiral groove 9. As a result of the coupling between the adjusting element 5 and the comb attachment 4 this attachment will be moved in these directions. The comb attachment comprises a flat wall portion 12 which engages against a corresponding wall portion 13, thereby preventing the comb attachment 4 from being rotated with the adjusting element 5.

In this way the comb attachment 4 can be adjusted simply by rotating the adjusting element 5. By means of the ridges 14 in the spiral groove 9 the projection 8 can be latched in the groove 9 and, consequently, the comb attachment can be latched relative to the housing can be latched in various positions. The adjusting element may be provided with ridges 15 to provide a better grip.

Obviously it is also possible to provide the adjusting element with a projection and to form the cylindrical portion 7 with a spiral groove.

Fig. 9 finally shows an embodiment in which

the adjusting element 16 is rotatably arranged on a cylindrical portion 17 of the comb attachment 4. Now a spiral-groove coupling is provided between the adjusting element 16 and said cylindrical portion 17, the cylindrical portion 17 being provided with a projection 18 and the adjusting element 16 being formed with a groove 19. The adjusting element 16 is rotatably coupled to the housing 1 by means of resilient hooks 20 which engage the groove 21 in the housing 1. In this way the comb attachment 4 is independently movable in the direction P or in the opposite direction.

Claims

1. A hair trimmer, comprising a housing provided with a stationary cutter and a cutter which can be driven relative to the stationary cutter, the housing being provided with a comb attachment which is adjustable relative to the housing, characterized in that the housing is provided with a rotatable annular adjusting element which forms part of a spiral-groove coupling between the housing and the comb attachment.

2. A hair trimmer as claimed in Claim 1, characterized in that the adjusting element is rotatably coupled to the comb attachment, and a projection of the housing engages a spiral groove formed in the inner side of the adjusting element.

3. A hair trimmer as claimed in claim 1, characterized in that the adjusting element is rotatably coupled to the comb attachment and a projection of the adjusting element engages a spiral groove formed in the housing.

4. A hair trimmer as claimed in claim 1, characterized in that the adjusting element is rotatably mounted on a portion of the comb attachment and said portion is provided with a projection which engages a spiral groove formed in the inner side of the adjusting element.

5. A hair trimmer as claimed in claim 1, characterized in that the adjusting element is rotatably mounted on a portion of the comb attachment and the adjusting element comprises a projection which engages a spiral groove formed in said portion of the comb attachment.

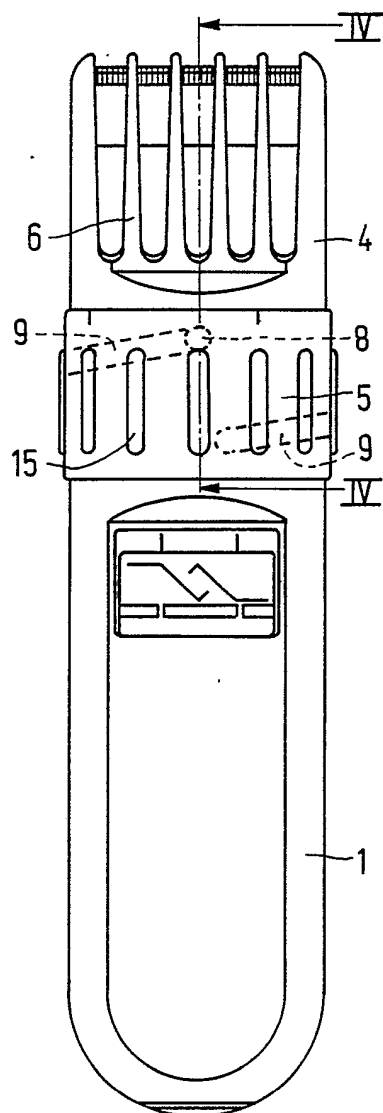


FIG.1

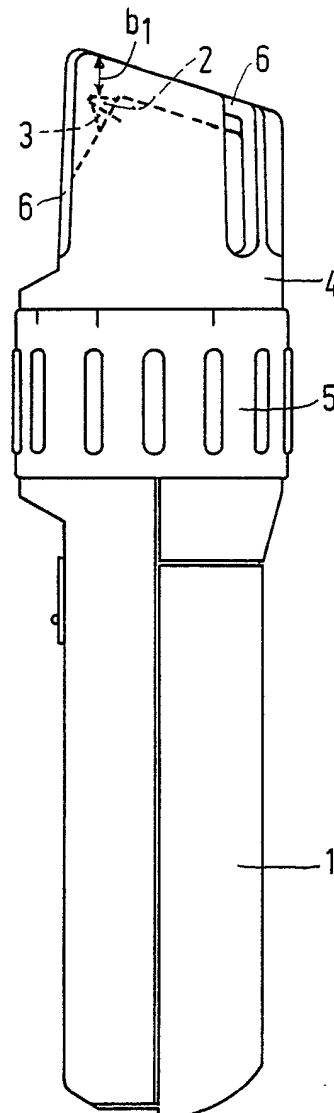


FIG.2

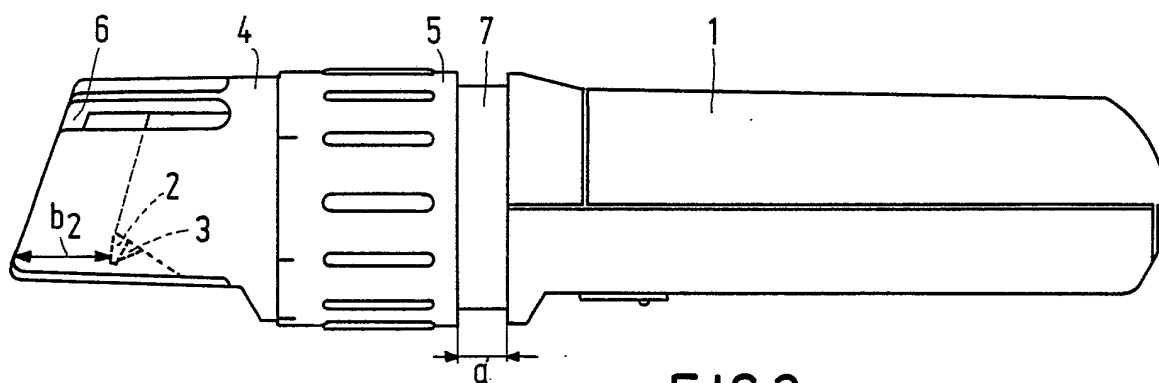


FIG.3

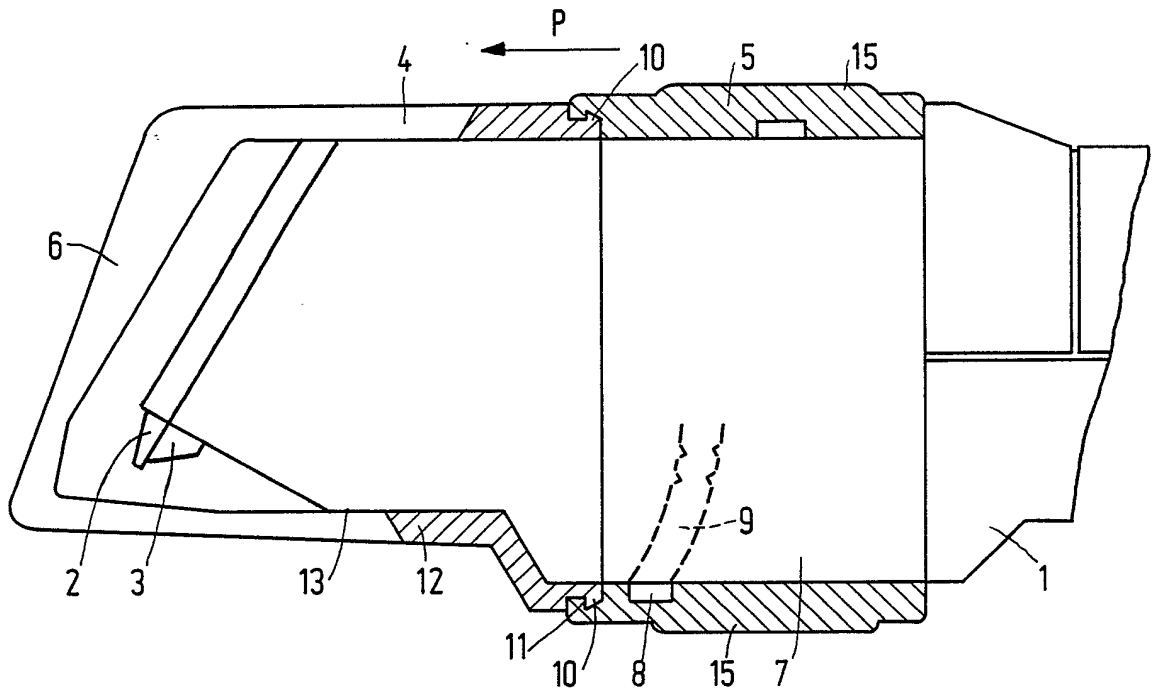


FIG. 4

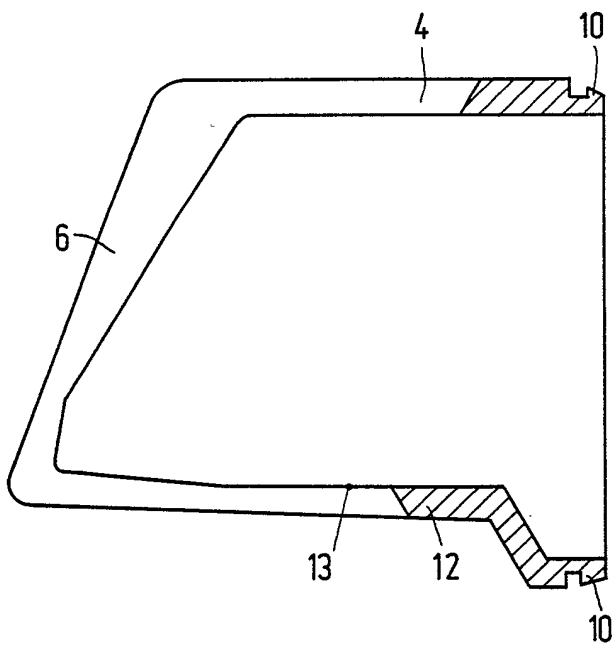


FIG. 5

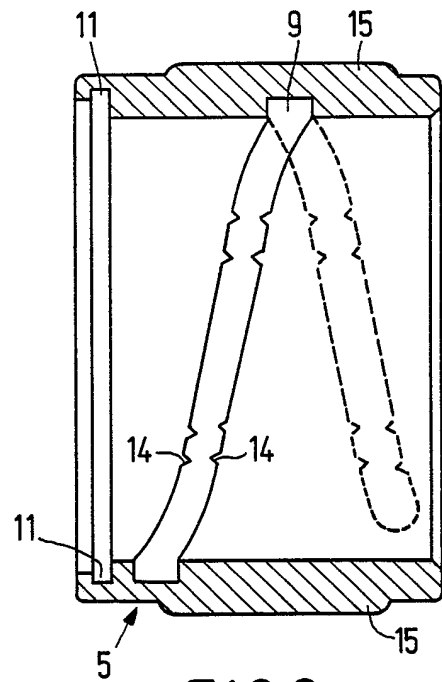


FIG. 6

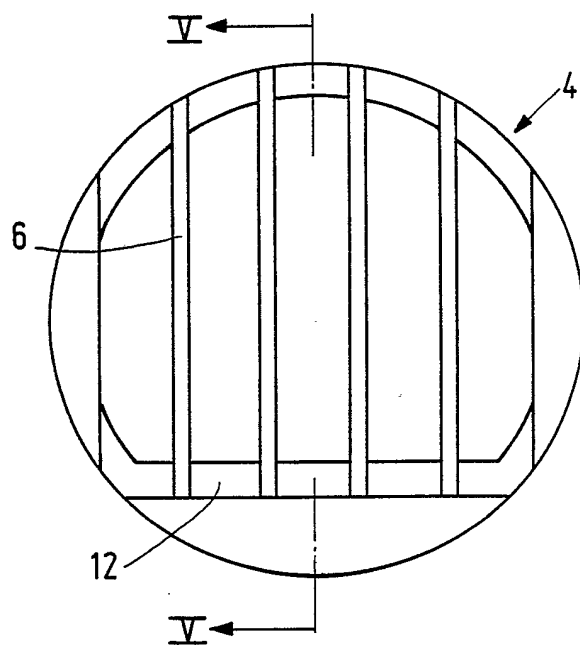


FIG. 7

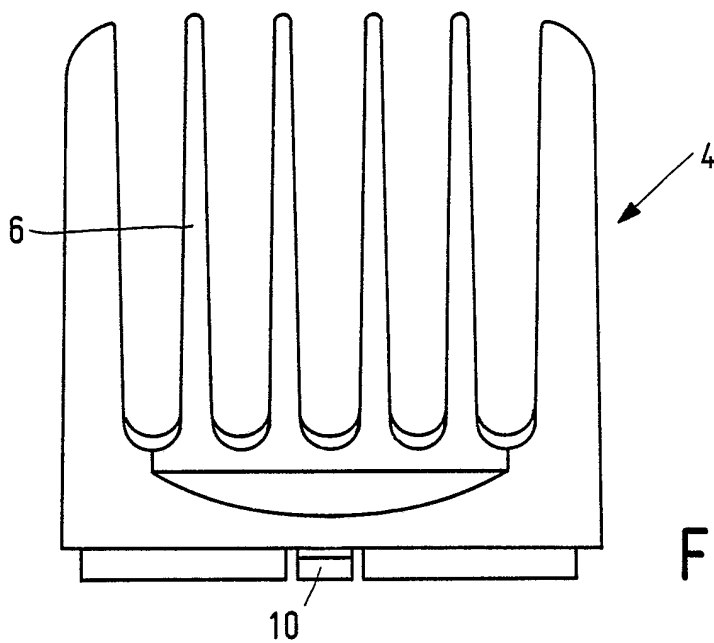


FIG. 8

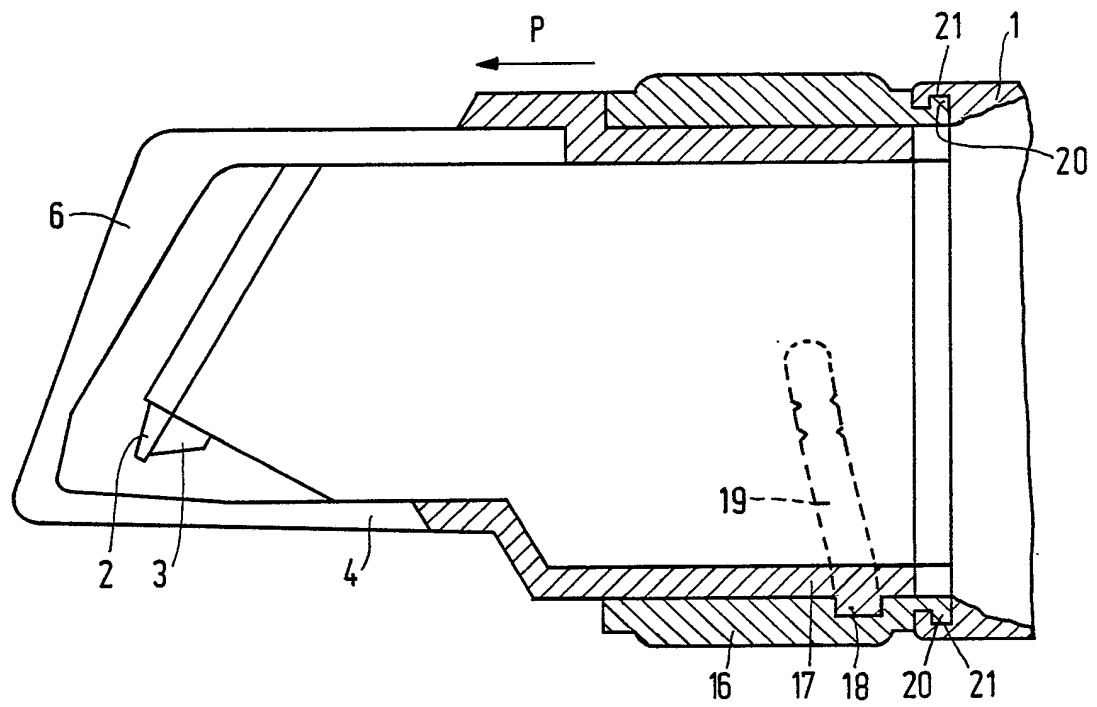


FIG.9



DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl. 4)
Y	DE-A-3 638 872 (MATSUSHITA) * Column 4, line 43 - column 6, line 46; figures 2,3 *	1-5	B 26 B 19/20
Y	US-A-4 533 984 (J.W. GATTON) * Column 12, lines 8-41; figure 8 *	1-5	
			TECHNICAL FIELDS SEARCHED (Int. Cl.4)
			B 26 B F 21 L
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 04-04-1989	Examiner WOHLRAPP R.G.
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	



(12)

EUROPEAN PATENT SPECIFICATION

(45) Date of publication of patent specification :
03.04.91 Bulletin 91/14

(51) Int. Cl.⁵ : **B26B 19/20**

(21) Application number : **89200084.5**

(22) Date of filing : **16.01.89**

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(30) Priority : **21.01.88 NL 8800132**

(43) Date of publication of application :
26.07.89 Bulletin 89/30

(45) Publication of the grant of the patent :
03.04.91 Bulletin 91/14

(84) Designated Contracting States :
AT DE FR GB NL

(56) References cited :
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JP-A- 5 932 153
US-A- 4 533 984

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Note : Within nine months from the publication of the mention of the grant of the European patent, any person may give notice to the European Patent Office of opposition to the European patent granted. Notice of opposition shall be filed in a written reasoned statement. It shall not be deemed to have been filed until the opposition fee has been paid (Art. 99(1) European patent convention).

Description

The invention relates to a hair trimmer, comprising a housing provided with a stationary cutter and a cutter which can be driven relative to the stationary cutter, the housing being provided with a comb attachment which is adjustable relative to the housing.

Such a hair trimmer is known, for example for the examined Japanese Patent Application 59-32153. In this trimmer the comb attachment comprises laterally projecting actuating elements for the adjustment mechanism and the latching mechanism of this comb attachment. These projecting actuating elements are annoying during use of the trimmer and, moreover, it is not unlikely that the position of the comb attachment relative to the trimmer is altered by contact with other objects in spite of the latching mechanism.

It is an object of the invention to solve these problems and to this end of the invention is characterized in that the housing is provided with a rotatable annular adjusting element which forms part of a spiral-groove coupling between the housing and the comb attachment.

Special embodiments are defined in the appended subsidiary Claims.

An embodiment of the invention will now be described in more detail, by way of example, with reference to the accompanying Figures.

Fig. 1 is a front view of the hair trimmer.

Fig. 2 is a side view of the hair trimmer shown in Fig. 1.

Fig. 3 is a side view similar to that shown in Fig. 2, but showing the comb attachment in another position.

Fig. 4 is a partly sectional view taken on the line IV-IV in Fig. 1 and showing only the comb attachment and the adjusting element in cross-section.

Fig. 5 shows the comb attachment in a longitudinal sectional view taken on the line V-V in Fig. 7.

Fig. 6 is a longitudinal section view of the adjusting element.

Fig. 7 is an end view of the comb attachment.

Fig. 8 is a front view of the comb attachment.

Fig. 9 shows a modification of the embodiment shown in Figs. 1 to 8 in a sectional view similar to that in Fig. 4.

The hair trimmer shown in the Figures comprises a housing 1 with a stationary cutter 2 and a cutter 3 which can be driven relative to the stationary cutter. The drivable cutter 3 is reciprocated in a manner known *per se*, so that the trimmer is particularly suitable, for example, for trimming a beard. For this purpose the trimmer comprises an accessory in the form of a comb attachment 4 which is adjustable relative to the housing 1.

For this adjustment the housing 1 is provided with an annular adjusting element 5 which is rotatable relative to the housing 1. The adjusting element 5 forms

part of a spiral-groove coupling between the housing 1 and the comb attachment 4, so that, as will be explained in more detail hereinafter, the position of the comb attachment 4 relative to the housing 1 and hence relative to the cutters 2 and 3 can be changed by rotating the adjusting element 5. In the situation illustrated in Fig. 3 the comb attachment has been moved over a distance "a" in comparison with the situation shown in Fig. 2, so that the distance b_2 between the teeth 6 of the comb attachment and the cutters 2, 3 in Fig. 3 is an amount of "a" larger than the corresponding distance b_1 in Fig. 2. In this way the trimmer can be adjusted to the required beard length.

The adjusting element 5 is rotatably arranged on a cylindrical portion 7 of the housing 1. This portion 7 is provided with a projection 8 which engages a spiral groove 9 in the inner side of the adjusting element 5. The comb attachment 4 is coupled to the adjusting element 5 by means of the resilient hooks 10 of the comb attachment, which hooks engage the groove 11 in the adjusting element (see also Figs. 5 and 6). By rotating the adjusting element 5 relative to the housing 1 and adjusting element is moved relative to the housing 1 in the longitudinal direction P or in the opposite direction because the projection 8 engages in the spiral groove 9. As a result of the coupling between the adjusting element 5 and the comb attachment 4 this attachment will be moved in these directions. The comb attachment 4 comprises a flat wall portion 12 which engages against a corresponding wall portion 13, thereby preventing the comb attachment 4 from being rotated with the adjusting element 5.

In this way the comb attachment 4 can be adjusted simply by rotating the adjusting element 5. By means of the ridges 14 in the spiral groove 9 the projection 8 can be latched in the groove 9 and, consequently, the comb attachment can be latched relative to the housing in various positions. The adjusting element may be provided with ridges 15 to provide a better grip.

Obviously it is also possible to provide the adjusting element with a projection and to form the cylindrical portion 7 with a spiral groove.

Fig. 9 finally shows an embodiment in which the adjusting element 16 is rotatably arranged on a cylindrical portion 17 of the comb attachment 4. Now a spiral-groove coupling is provided between the adjusting element 16 and said cylindrical portion 17, the cylindrical portion 17 being provided with a projection 18 and the adjusting element 16 being formed with a groove 19. The adjusting element 16 is rotatably coupled to the housing 1 by means of resilient hooks 20 which engage the groove 21 in the housing 1. In this way the comb attachment 4 is independently movable in the direction P or in the opposite direction.

Claims

1. A hair trimmer, comprising a housing (1) provided with a stationary cutter (2) and a cutter (3) which can be driven relative to the stationary cutter (2), the housing (1) being provided with a comb attachment (4) which is adjustable relative to the housing (1), characterized in that the housing (1) is provided with a rotatable annular adjusting element (5) which forms part of a spiral-groove coupling between the housing (1) and the comb attachment (4).

2. A hair trimmer as claimed in Claim 1, characterized in that the adjusting element (5) is rotatably coupled to the comb attachment (4), and a projection (8) of the housing (1) engages a spiral groove (9) formed in the inner side of the adjusting element (5).

3. A hair trimmer as claimed in claim 1, characterized in that the adjusting element (5) is rotatably coupled to the comb attachment (4) and a projection of the adjusting element (5) engages a spiral groove formed in the housing (1).

4. A hair trimmer as claimed in claim 1, characterized in that the adjusting element (16) is rotatably mounted on a portion (17) of the comb attachment (4) and said portion (17) is provided with a projection (18) which engages a spiral groove (19) formed in the inner side of the adjusting element (16).

5. A hair trimmer as claimed in claim 1, characterized in that the adjusting element (16) is rotatably mounted on a portion (17) of the comb attachment (4) and the adjusting element (16) comprises a projection which engages a spiral groove formed in said portion (17) of the comb attachment (4).

Ansprüche

1. Haarschneidegerät mit einem Gehäuse (1) mit einem ortsfesten Schneidelement (2) und einem gegenüber demselben antreibbaren Schneidelement (3), wobei das Gehäuse (1) mit einer gegenüber demselben einstellbaren Kammvorrichtung (4) versehen ist, **dadurch gekennzeichnet**, daß das Gehäuse (1) mit einem drehbaren ringförmigen Einstellelement (5) versehen ist, das einen Teil einer Schraubenrillenkupplung zwischen dem Gehäuse (1) und der Kammvorrichtung (4) bildet.

2. Haarschneidegerät nach Anspruch 1, **dadurch gekennzeichnet**, daß das Einstellelement (5) mit der Kammvorrichtung (4) drehbar gekuppelt ist und ein Vorsprung (8) des Gehäuses (1) mit einer Schraubenrille (9) auf der Innenseite des Einstellelementes (5) zusammenarbeitet.

3. Haarschneidegerät nach Anspruch 1, **dadurch gekennzeichnet**, daß das Einstellelement (5) mit der Kammvorrichtung (4) drehbar gekuppelt ist und ein Vorsprung des Einstellelementes (5) mit einer in dem Gehäuse (1) gebildeten Schraubenrille zusammenar-

beitet.

4. Haarschneidegerät nach Anspruch 1, **dadurch gekennzeichnet**, daß das Einstellelement (16) auf einem Teil (17) der Kammvorrichtung (4) drehbar angeordnet ist, wobei dieser Teil (17) mit einem Vorsprung (18) versehen ist, der mit einer Schraubenrille (19) auf der Innenseite des Einstellelementes (16) zusammenarbeitet.

5. Haarschneidegerät nach Anspruch 1, **dadurch gekennzeichnet**, daß das Einstellelement (16) auf einem Teil (17) der Kammvorrichtung (4) drehbar angeordnet ist und einen Vorsprung aufweist, der mit einer in dem genannten Teil (17) der Kammvorrichtung (4) gebildeten Schraubenrille zusammenarbeitet.

Revendications

1. Tondeuse comportant un boîtier (1) contenant un couteau stationnaire (2) et un couteau (3) pouvant être entraîné par rapport au couteau stationnaire (2), le boîtier (1) étant muni d'un peigne rapporté (4) pouvant être réglé par rapport au boîtier (1), caractérisée en ce que le boîtier est muni d'un élément de réglage annulaire rotatif (5) faisant partie d'un couplage à rainure hélicoïdale entre le boîtier (1) et le peigne rapporté (4).

2. Tondeuse selon la revendication 1, caractérisée en ce que l'élément de réglage (5) est couplé libre en rotation au peigne rapporté (4) et en ce qu'un tenon (8) du boîtier (1) pénètre dans une rainure hélicoïdale (9) pratiquée dans la face intérieure de l'élément de réglage (5).

3. Tondeuse selon la revendication 1, caractérisée en ce que l'élément de réglage (5) est couplé libre en rotation au peigne rapporté (4) et en ce qu'un tenon de l'élément de réglage (5) s'engage dans une rainure hélicoïdale pratiquée dans le boîtier (1).

4. Tondeuse selon la revendication 1, caractérisée en ce que l'élément de réglage (16) est monté libre en rotation sur une partie (17) du peigne rapporté (4) et en ce que ladite partie (17) est munie d'un tenon (18) s'engageant dans une rainure hélicoïdale (19) pratiquée dans la face intérieure de l'élément de réglage (16).

5. Tondeuse selon la revendication 1, caractérisée en ce que l'élément de réglage (16) est monté libre en rotation sur une partie (17) du peigne rapporté (4) et en ce que l'élément de réglage (16) présente un tenon s'engageant dans une rainure hélicoïdale formée dans ladite partie (17) du peigne rapporté (4).

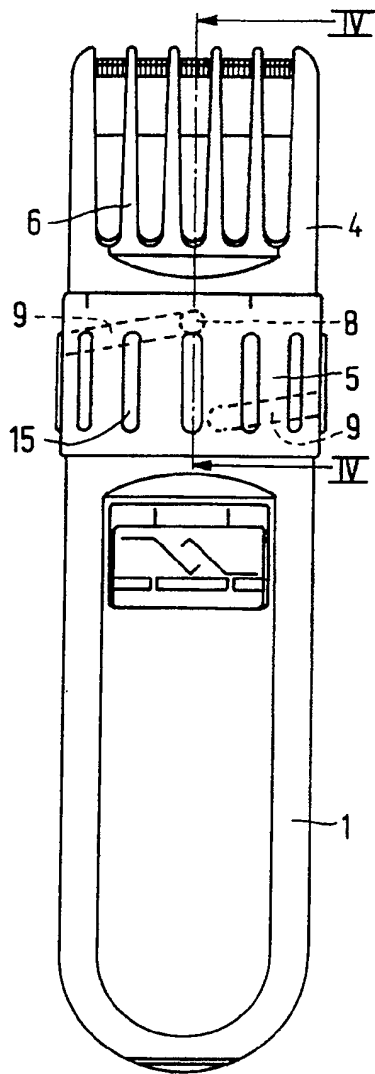


FIG.1

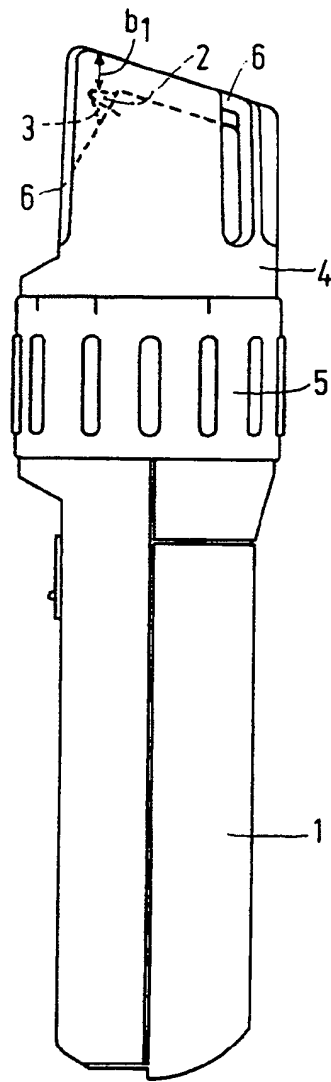


FIG.2

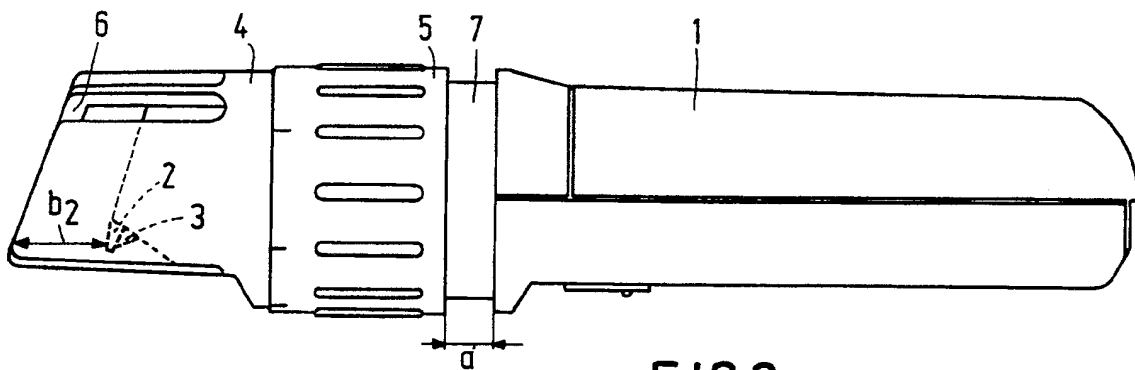


FIG.3

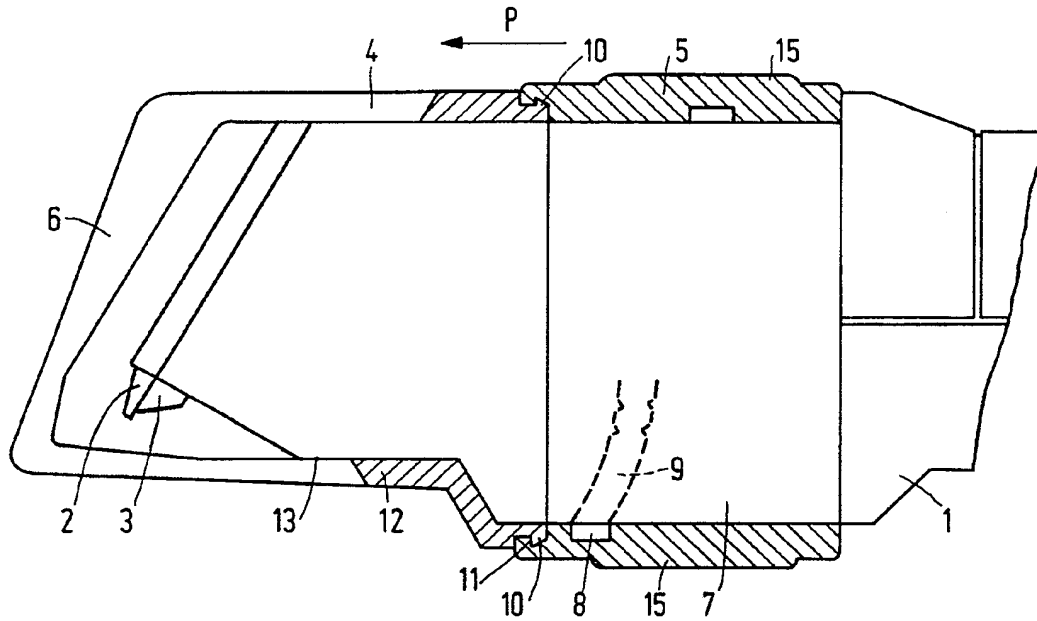


FIG. 4

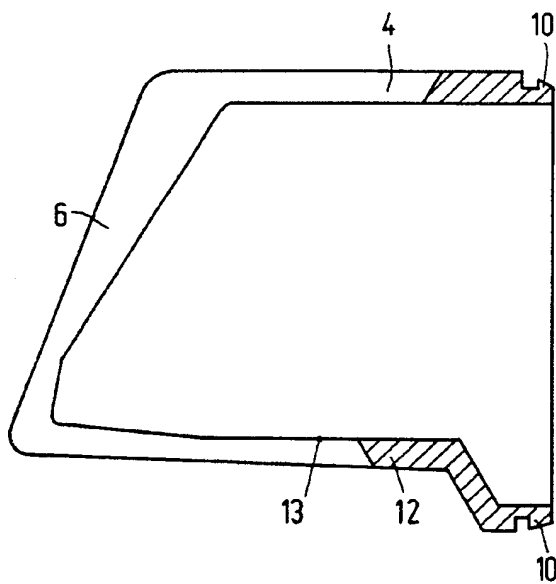


FIG. 5

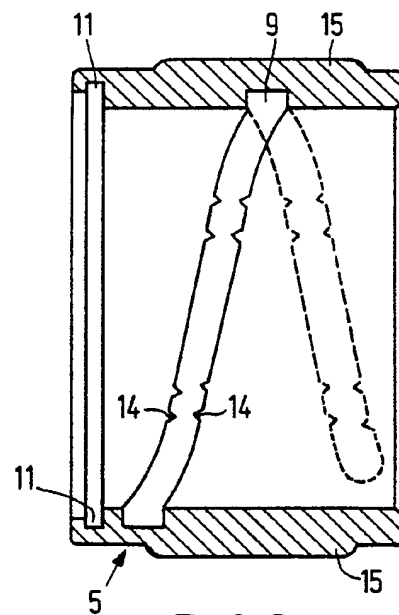


FIG. 6

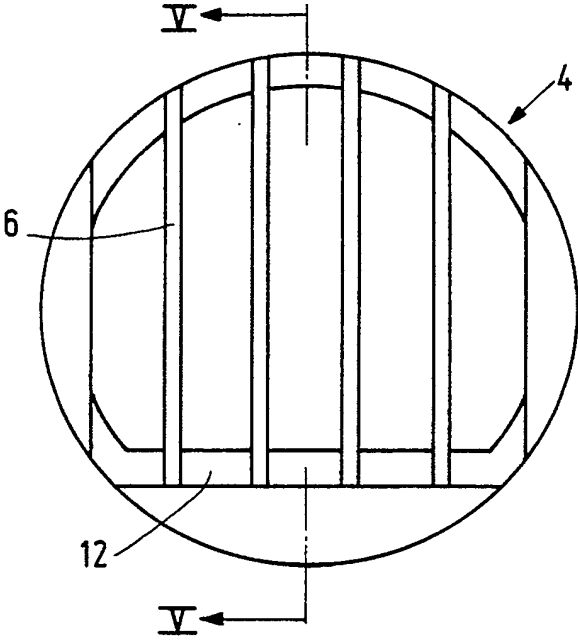


FIG. 7

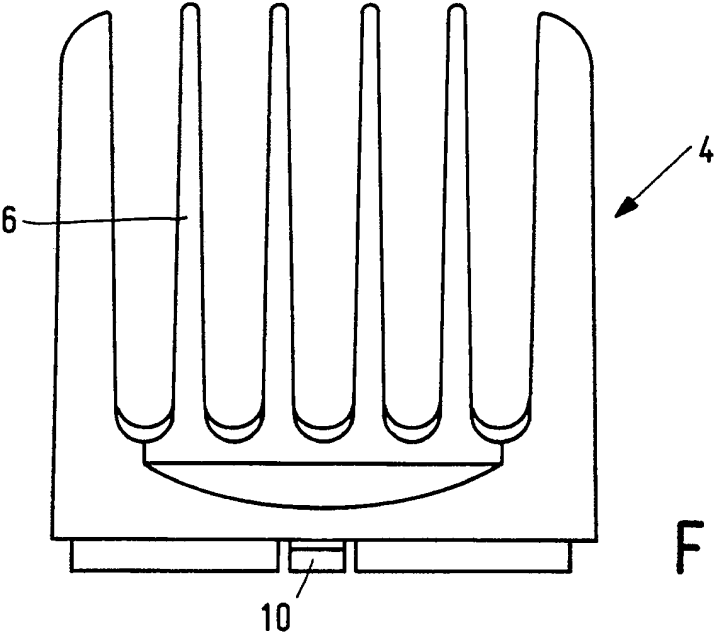


FIG. 8

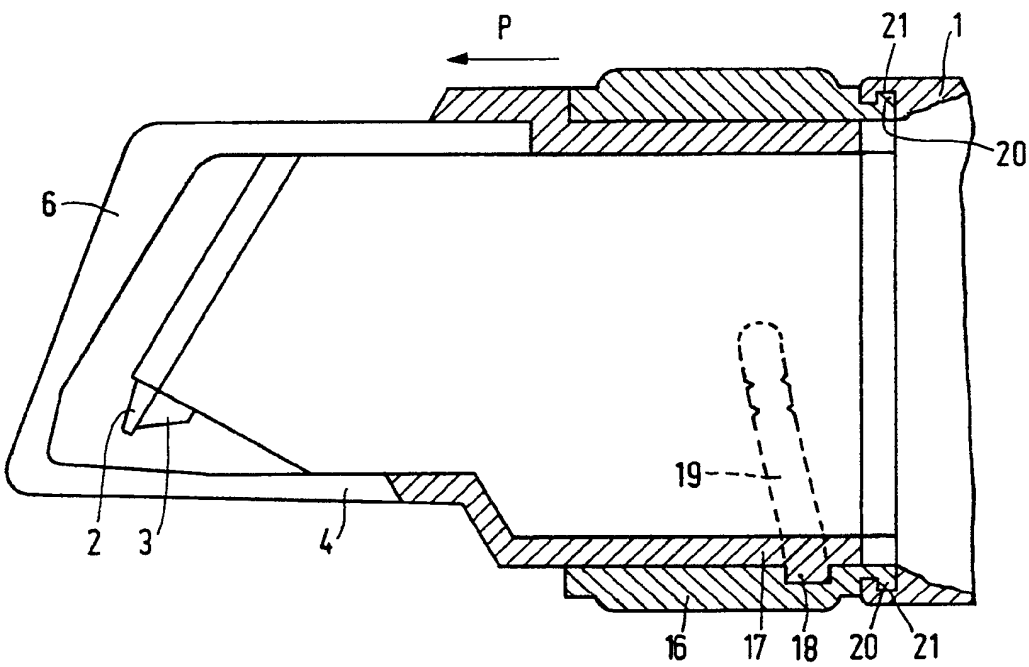


FIG.9